VOL. XXVI. September, 1899. No. 9.

THE

Journal

OF

Nervous and Mental Disease.

Original Articles.

ISOLATED FINGER PARALYSIS.*

By William Browning, M.D.,

BROOKLYN, N. Y.

The title given is so far inexact, as in the present case only the extensors were affected and not the flexors.

The gentleman, O. P. A., whose case I have to relate, was 78 years of age at the time of his death in December, 1897. He had been a prominent man in one of the New England cities, and had passed an energetic though rather easy life. His usual weight was about 200 pounds. In general, he was a good liver, though an abstainer from all alcoholic drinks. Since youth he had been a chewer of tobacco, never a smoker. For many years, and it was claimed even since childhood there had been an increasing irregular tremulousness of the hands, appearing only on effort; apparently, however, this was of the senile form. Otherwise, his health had always been excellent.

Perhaps it may be as well to begin with the notes made when the photographs were taken in November, 1894. His mental condition was then clear and good, though he no longer felt equal to business affairs. The skin of the fingers was heavily wrinkled, as is apparent from the pictures. During an attack of bronchitis a year previously, there had been moderate albuminuria; but this had since disappeared. His urine at times showed an excess of uric acid, though he had never had frank gout. Beyond this and the marks of age there was no further trouble, constitutional or otherwise. He was right-handed.

His special trouble began some three years before this,

---

* Read at the twenty-fifth annual meeting of the American Neurological Association, June 14 and 15, 1899.

i. e., when he was 72 years of age. He had always been a follower of the rod and gun. One day while trout-fishing there was a sudden snap of something at the back of the right hand as he was swinging the rod. He immediately found that there was complete extensor paralysis of the middle finger, passive motion being still free. This was promptly followed by severe pain in the back of the hand, extending partly down that finger and up the forearm. The pain abated considerably within a couple of hours, and by next day was wholly gone. After that he learned to extend this finger by getting the two on either side under it. This soon became so habitual as scarcely to be noticed by others. It may be added that there had been no previous trouble with, or accident to, the part; except for the strain on the fingers of handling a fishing-rod, the occurrence was spontaneous.

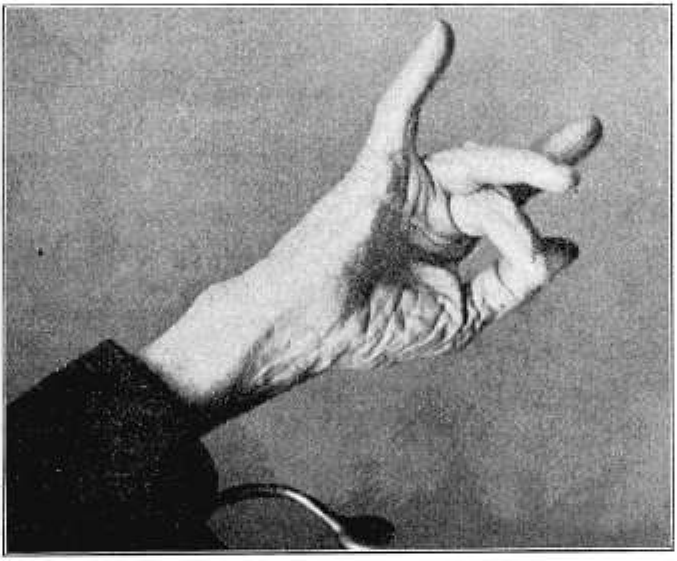


Fig. I

The above described condition continued unchanged for a year and a half. Then, in addition, the adjoining ring finger of the same right hand became affected in like manner. This occurred while lifting a small box. Hence each attack occurred at times when the muscles were presumably under considerable strain. This second involvement was also immediately followed by local pain, even more intense than the first. It started from the back of the hand and extended up the forearm to the elbow. Bathing and a somewhat firm bandage to hand and forearm eased the suffering by evening. Yet the pain and some soreness locally lasted into the following day at least. Since then there has been no change.

No pain nor premonition preceded either attack. Sometimes the fingers seem to get caught, and he has to start them with the help of the other hand. Passive motion is free and natural in all directions. Grip (*i. e.*, flexion) does not appear to be interfered with. There was no chance to test the electrical reactions. The local changes at this time were so slight in appearance as scarcely to be detected. In comparison with the other side there was just a faint depression over the tendonpath at the back of the hand; and, when flexed, a slight projection of tendon over the ring-knuckle (aspect towards finger). The position of the hand as a whole is well shown by the accompanying pictures. It might be added that there was no anesthesia, subjective or objective. No difference in the wrist-reflexes—all for that matter slight.

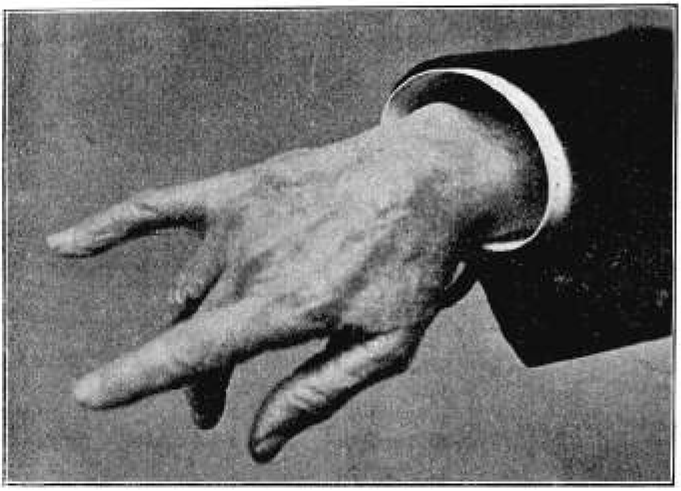


Fig. II.

As to the presumptive seat of the lesion in this case, the fact of severe local pain at each attack was sufficient to exclude central trouble. This was also borne out by the exceedingly limited and complete character of each paralysis. Neither were the symptoms those of even a local neuritis, though some gouty affection could not be entirely excluded. My own conclusion at the time was that there must have been a fraying-off of the tendon.

While his subsequent history has no direct bearing on this matter, it may be briefly summarized. The hand paralysis remained entirely unchanged.

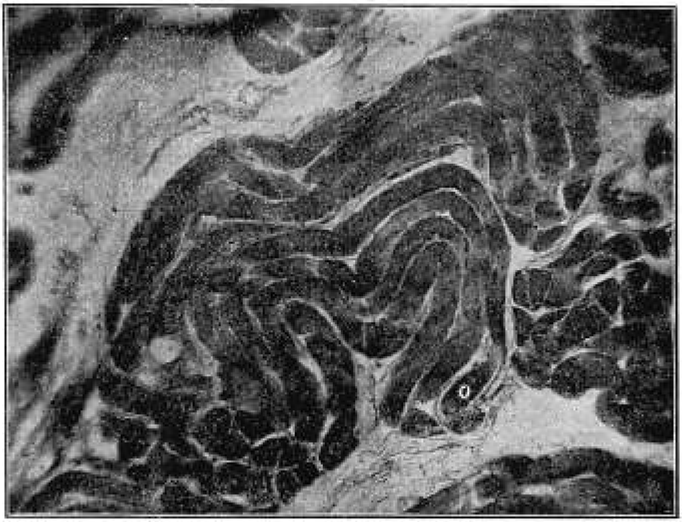
In 1895 the right eye showed signs of beginning cataract, though it never progressed much. Slight puffiness appeared about the feet and legs. He twisted the right foot (possibly a slight stroke), and thereafter it was more swollen and the toes, especially the big toe, showed a flexion-contracture. The right knee-jerk was a little the stronger (no clonus), and the right leg was more sensitive to pressure. There was also a very slight contracture at the right knee. From this time he gradually became feebler, his mental and physical strength failed, and he died of senile exhaustion some six years after the first onset of his finger paralysis.

Autopsy, December 31, 1897. Body somewhat emaciated. Only the upper extremities examined.

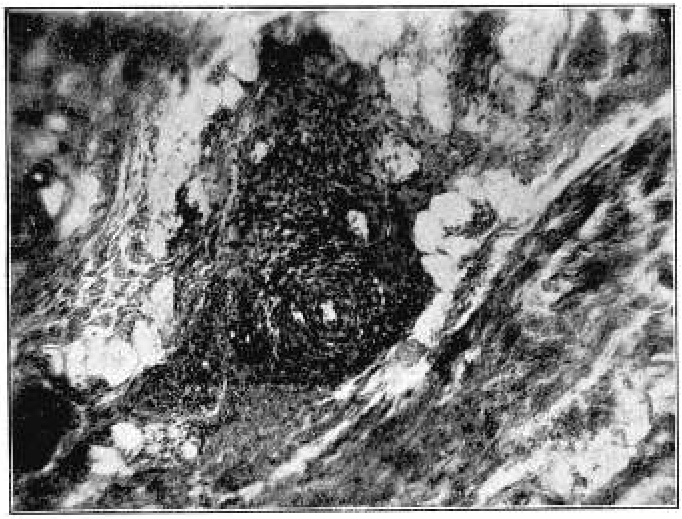
Maximum circumference of left forearm 23.5 cm., of right 23.0 cm. On laying bare the deeper structures of the forearms, marked changes were evident on the right side, the left proving normal.

On the right the long extensors of the middle and ring fingers showed analogous changes. Their tendons over the distal three-fifths of the dorsum of the hand were approximately natural. But from there to about one-third up the forearm—a hiatus of perhaps four inches—these tendons had so far disappeared and become amalgamated with their thickened sheath that only a strand could be separated out as the possible remnant. In fact this strand, as contrasted with the glistening white tendon, had the appearance of pale sheath-tissue. The agglutination and thickening were most marked in the region corresponding to the annular ligament of the wrist. On subsequently cutting through this material, a small lump of muscular tissue was found in the middle of it. The tissue proper of the two affected muscles was much shrunken, disintegrated, separated into fragmentary masses, and flecked with scant patches of fat. The belly of each muscle appeared to be replaced by gravish-yellow fat-tissue. Close to the elbow, however, some of the muscle-fibers were preserved.

The adjoining muscles and tendons—to index, little finger and thumb—were intact, except that the index tendon was enveloped partly in the sheath-thickening above described.

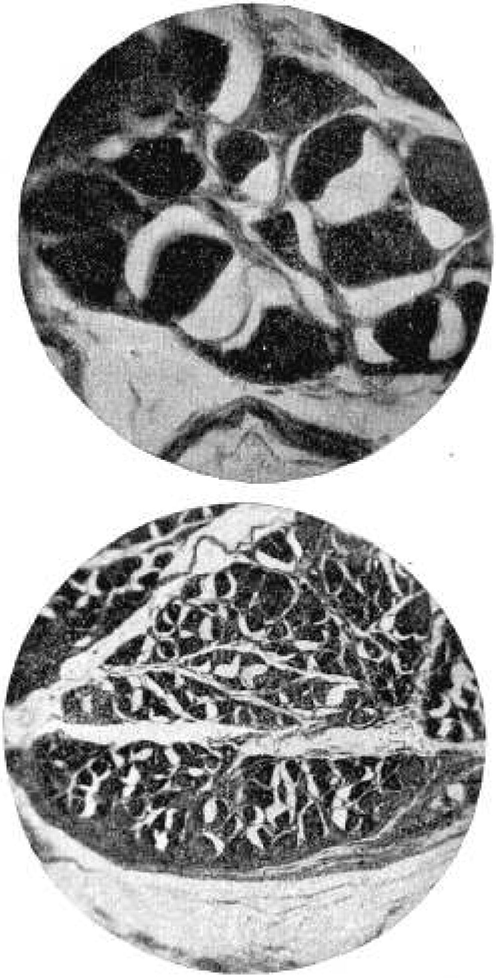


Specimen No. 1.



Specimen No. 4.

Report by Dr. Archibald Murray, Fellow of the Hoagland Laboratory, on the findings in the specimens of muscle submitted by Dr. Browning.

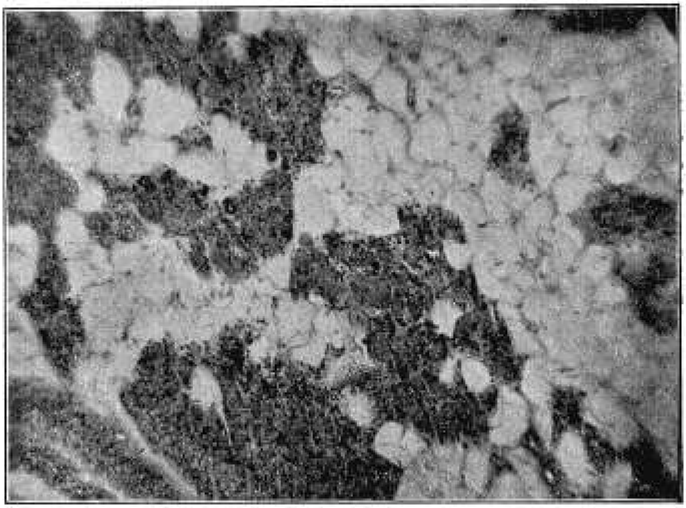


Specimen No 4 under different magnifications.

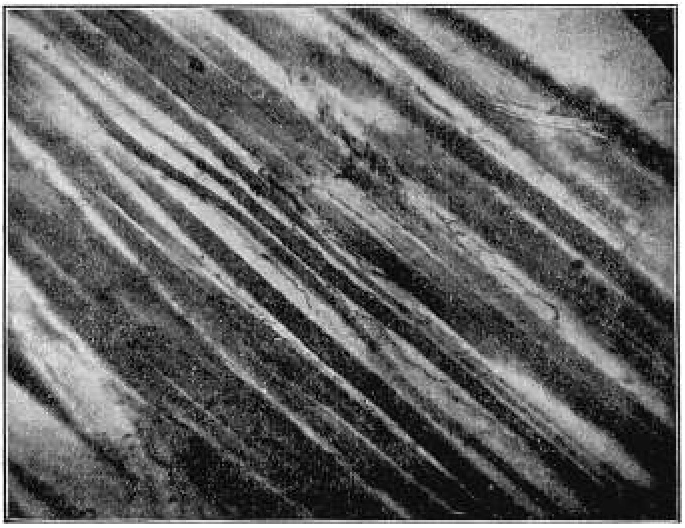
"Specimen No. 1. This is taken from a mass of degenerated muscle from one of the two involved muscles, near the tendon.

"Many of the fibers have undergone retraction, their course being very irregular. Hyaline degeneration is well marked in many of the fibers.

"Specimen No. 4. This is from a mass taken from the back of wrist. In the portions of this specimen where the muscle fibers have been cut transversely, they appear to have atrophied or shrunken to about one-half their normal size, the



Specimen No. 8.



Specimen No. 10.

remains of the muscle fiber occupying one-half of the space surrounded by the endomysium, the other half being empty. Some of the atrophied fibers show a well-marked hyaline degeneration. There is a moderate small-round-cell infiltration, and the vessels show a well-marked obliterating endarteritis.

"Specimen No. 8. This is taken from the belly of the affected muscle, near the elbow joint. (Extensor communis digitorum.)

"The small-round-cell infiltration is most marked in certain portions of this specimen. Here and there are seen isolated masses of muscle-fibers surrounded by spaces from which the fibers have disappeared.

"Specimen No. 10. This is from one of the involved muscles and shows some irregularity in the size of the individual fibers."

Remarks:—Even with the aid of the post-mortem findings, it is not entirely clear what was the nature of the original process here. If we suppose a local inflammation, it hardly accounts for the practical disappearance of a portion of the tendons. There had been no suggestion of trigger-finger, nor would that in any way explain the facts. Though the neighboring tendons as well as those of the opposite side looked perfect and of unusual strength, still the character of the original attacks and the condition found on autopsy speak for a rupture of the tendons. At such occurrence, some effusion must have developed, and this explains the slight thickening at the wrist and the partial enclosure of the index tendon. The repetition of the attack shows that it was something more than an accidental occurrence. In any case it was a local affair, and doubtless in some way senile in character.

Examination of the special journals and text-books, and even the *Index Medicus,* has so far failed to disclose any case at all corresponding to the present one. Dr. Fletcher of the Surgeon General's Library also very kindly looked the matter up, but found no reference bearing directly on this case.

Paralysis of a nerve of the arm is well known; spasm of the muscle of one or more fingers is occasionally described; occupation neuroses in great variety are recognized; joint affections causing stiffness of one or more fingers are also now and then met with (*e. g.,* Prince's case in *Bost. Med. and S.*

Jour., 1899, March 2, involving middle, ring and little fingers, with weakening of the flexors); trophic alterations may occur.

The nearest analogy, however, of the present case is furnished by the rare cases of traumatic rupture of finger tendons.

Segond[1] reports a case of subcutaneous rupture of the extensor tendon of phalanx of little finger.

Busch[2] gives one of the thumb, three of the little finger, and one of the ring finger.

Polaillon[3] is said to mention two cases, one of the index and the other of the little finger.

Mueller[4] reports a case.

M. Gangolphe[5] reports the case of a man of 35 years who had subcutaneous tearing of extensor tendon of the second phalanx of the thumb, due to violent flexion. Pain, swelling, ecchymotic discoloration, position of phalanx in partial flexion, and increased lateral motion resulted.

Hence while in one or the other of these cases, each of the fingers has been implicated, still they refer chiefly to the extensor tendons of the little finger. So far as the subject has been looked up, however, these were all due to external violence, and have no further bearing on the case here reported.

DISCUSSION.

Dr. F. X. Dercum said that the problem brought forward by Dr. Browning was an unique one, as we know little about the senile changes that take place in the tendons. The thought suggested itself to Dr. Dercum that a break or tear of the tendon was produced by the muscular effort, and that the muscular changes were the indirect result of this injury.

Dr. Browning said that the pathologists were inclined to attribute the changes to the obliterating endarteritis; if this view was correct, he failed to see why similar changes were not found in the index finger of the same hand, inasmuch as obliterating endarteritis existed here.

---

[1] Bull. de la Société anat., 1879, p. 724.

[2] Centbl. f. Chirurgie, 1881, No. 1.

[3] Art. "Doigt" in the Dictionnaire encyclopédique.

[4] "Cas de rupture des tendons fléchisseurs du médius gauche." Mem. Soc. de Méd. de Strasb. (1881-2) 1883, XIX, pt. 2, 50-52.

Mem. et compt.-rend. Soc. d. Sc. Med. de Lyon (1885), 1886, XXV pt. 2, 74-77.